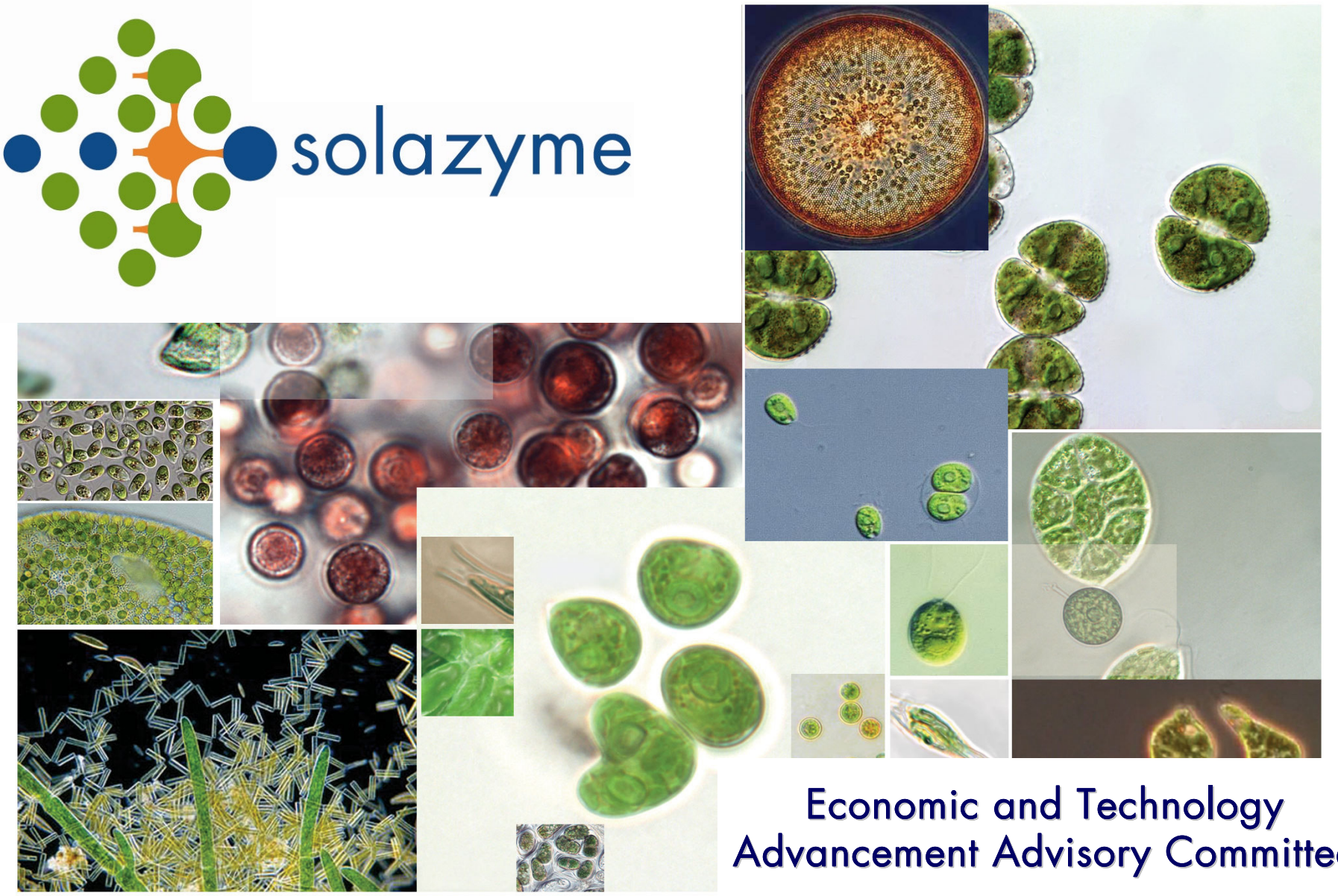
solazyme



Economic and Technology Advancement Advisory Committee

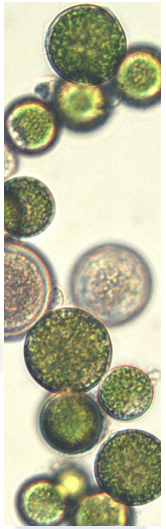
September 6, 2007

Agenda

- Overview of Solazyme
- Algae Background
- Biofuels and Biodiesel
- Areas of Potential Government Impact

Who is Solazyme?

Quick Facts



- Founded in 2003 to pursue biofuels from microalgae
- Venture Capital financed
- Producing biofuels at semi-commercial scale
- 25+ Patent Applications; 1 issued patent in renewable energy
- World-class scientific team

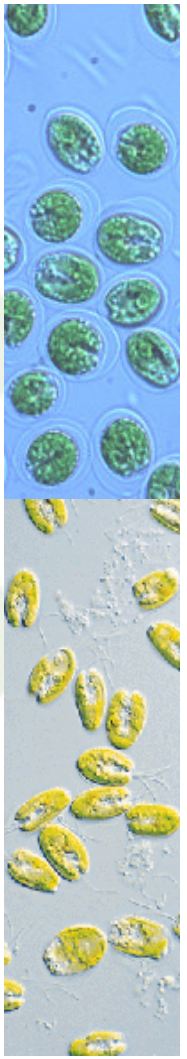
Board of Directors / Senior Management

Management

- Dr. Harrison Dillon (CEO, Director & co-founder)
  - J.D. /Ph.D. (Duke Univ./Univ. Utah.) Geneticist/Patent Attorney
- Jonathan Wolfson (President/COO, Director & co-founder)
  - J.D./M.B.A. (NYU), Founder InvestorTree, Triarc, Fried Frank, Morgan Stanley
- Dr. Arthur Grossman (Chief of Genetics)
  - Professor Stanford/Carnegie Inst. – Top Researcher - Darbaker Prize
- Dr. Anthony Day (Vice President of Research & Development)
  - Ph.D. Imperial College London, 12 yrs at Genencor International
- Dr. Donald Trimbur (Senior Director of Biofuels)
  - Ph.D. Cornell, Genencor/DuPont 1,3 propanediol strain development project leader
- David Brinkmann (Senior Director of Process Development & Manufacturing)
  - ChemE. Case Western, 32 Years Bioprocess Development, CP Kelco, Tate & Lyle
- Dr. Walter Rakitsky (Senior Director of Business and Strategy)
  - M.B.A./Ph.D. (Wharton/Penn.State), CP Kelco, Advanced Bionutrition

Non-executive Directors

- Jerry Fiddler (Chairman) – Founded Wind River (Nasdaq: WIND)
- Dr. Michael Arbige - EVP, Technology, Genencor International
- Daniel Miller - Managing Director, The Roda Group



Algae

- >50% of Earth's biomass (>100,000 known species)
- Earliest precursors to all plant life on Earth
- Commercially under-exploited
  - Missed Federal $ for Pharma & Ag
- Diverse Biochemical Production
  - Many High Value outputs
- Complete set of photosynthetic machinery
- Emerging Engineering toolkit
  - >10 sequenced genomes
  - Gene chips

Biofuels and Biodiesel

solazyme

biotechnology and energy

Solazyme Biofuel and Related Products

Liquid transportation fuels

- Development Stage Projects
  - Algal Biodiesel (transesterification)
  - Algal Renewable Diesel (hydrotreating)
- Research Stage Project
  - Algal Biocrude Oil

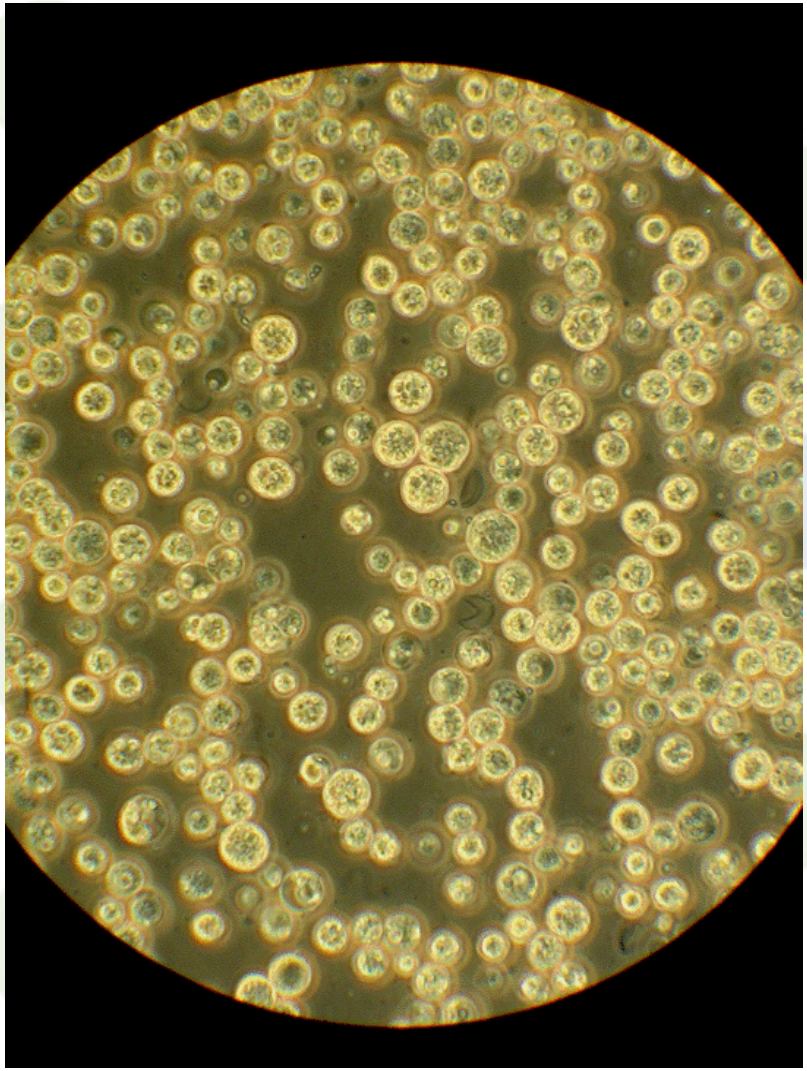
"Green" Petrochemicals & Feedstocks

Replace crude oil as feedstock

- High value "Green" specialty chemicals
  - Surfactants
  - Anti-corrosives
  - Other oleochemicals

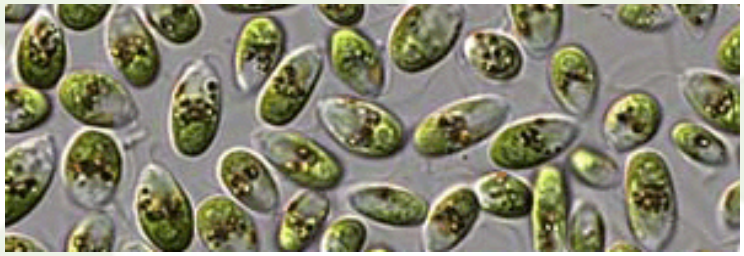
Solazyme's Algal Biodiesel Program

- Production of biodiesel feedstock with economics competitive with petrodiesel
- These oils are a highly evolved energy storage vehicle in algae
- Solazyme has produced biodiesel feedstock at semi-commercial scale
  - Thousands of gallons in 2007
  - Hundreds of thousands of gallons in 2008 (if we make the capital investment)
- Supply agreement with Imperium Renewables



Current and Future Biofuels

- Current
  - Ethanol
  - Plant-based Biodiesel
- Future (near-term)
  - Algal Biodiesel
  - Algal Renewable Diesel
  - Algal Jet Fuel
  - Butanol



Algal Biofuels have Low Carbon Footprints

100% of the CO_2 produced by burning algal biofuels is removed from the atmosphere during biofuel production

Solazyme Bioproduction

Energy

CO_2

Transesterification/ Refining

Jet Fuel

Diesel

Gasoline

CO_2

CO_2

CO_2

Advantages of Microalgal Biodiesel

- Compatible with EXISTING:
  - Storage/Transportation infrastructure (tanks, tankers)
  - Distribution infrastructure (gas stations)
  - Consumption infrastructure (diesel vehicles)
- Very Low Carbon Footprint
- Provides lubricity to low sulfur diesel
- Excellent emission profile
- Lipid profile is an ideal biodiesel feedstock
- Can be blended in any proportion with petrodiesel
- Very high flashpoint of >200°F (safety)

Areas of Potential Government Impact

What Should be Incentivized?

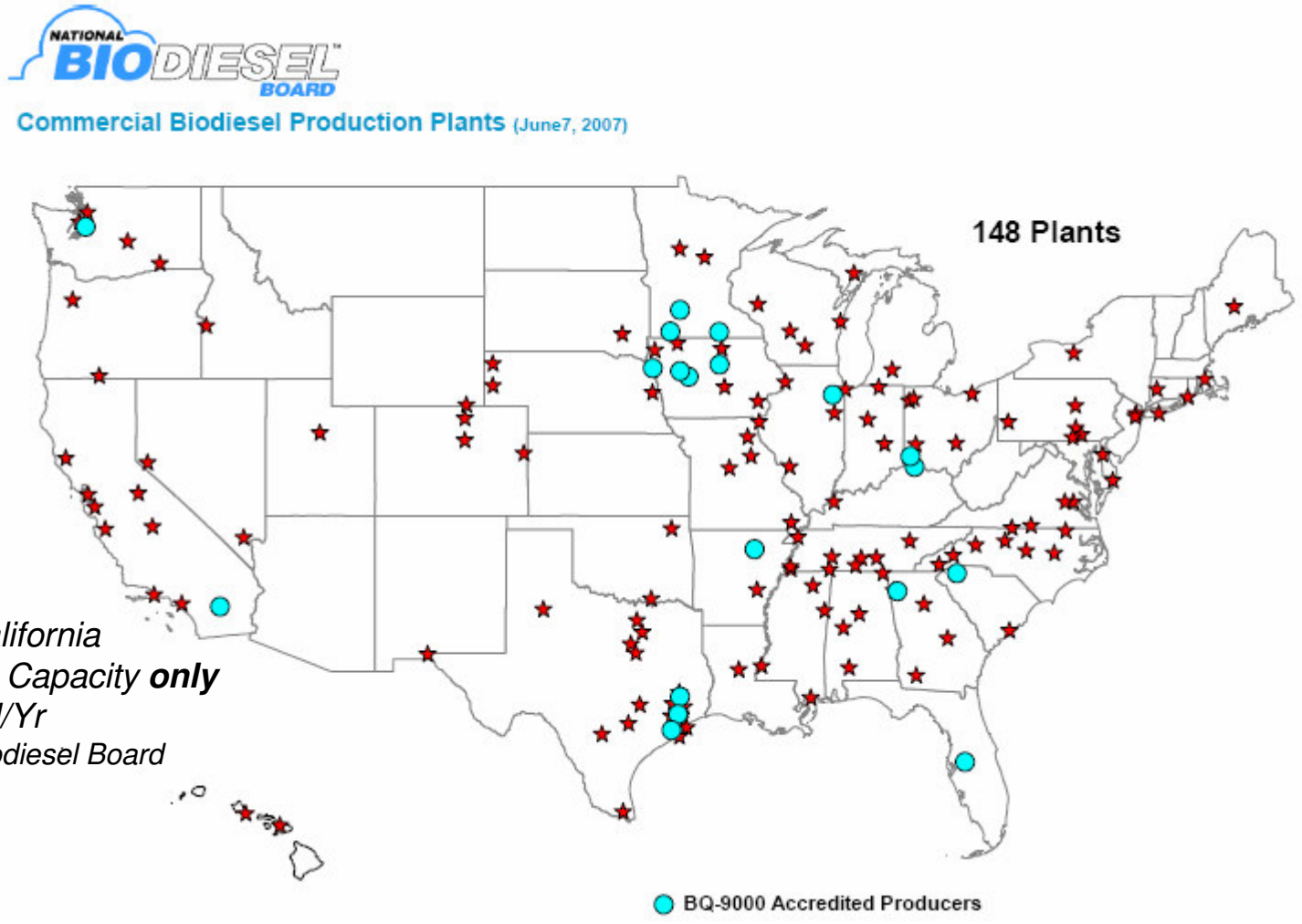
- There is ~$6 trillion in existing infrastructure to store, transport, and consume fossil-based transportation fuels in the US
- *Incentives should be concentrated on renewable fuels which are fully compatible with existing infrastructure and standards*
  - Hydrogen and Ethanol are not compatible
  - Algal Biodiesel is compatible;
    - Meets ASTM fuel standards
    - Fits storage and transportation infrastructure
    - Fits distribution infrastructure - no gas station retrofit needed
    - Fits vehicle fleet - conventional diesel engines can use it today

Compatible renewable fuels will be adopted at large scale

Needed California Initiatives

- Incentives to increase California-based production of biofuels
  - US Biodiesel infrastructure is currently concentrated in the Midwest
- Provide funding and incentives for California-based alternative fuel technologies that are compatible with existing infrastructure and ASTM standards

Increased CA Biodiesel Production Needed



Note:
Current California Production Capacity ***only***
19.3 M Gal/Yr
**National Biodiesel Board*

High Priority Government Programs

- Help fund California-based microbial biofuel pilot plants
  - A funding gap exists between research scale and commercial production scale - investors are reluctant to pay for pilot plants
  - Some states are already active in funding pilot plants (NY, Iowa, Oregon, and others)
  - Federal government has been funding only cellulosic ethanol pilot plants- Silicon Valley is far beyond just ethanol
- Mandate low-sulfur petrodiesel to be blended with at least 2% biodiesel to provide lubricity lost by removing sulfur
- Increase public vehicle use of biodiesel- subsidize supply agreements
- Define quality standards and assurance requirements
- Create a Renewable Fuel Standard which addresses energy content, efficiency and lifetime CO_2 emissions

Conclusions

- Alternative fuels that are compatible with existing transportation fuel infrastructure are most likely to be adopted at large scale
- Algal Biodiesel and Algal Renewable Diesel are compatible with existing transportation fuel infrastructure and can be made at semi-commercial scale by Solazyme today
- Algal Biodiesel and Algal Renewable Diesel are therefore important near term alternative fuels
- Solazyme is positioned to be a major California producer of alternative, low carbon fuels
- Government support will be critical to the rapid development of new alternative fuels
- California can and should lead the way